UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS TX 75202-2733

MAY – 9 2013

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Ms. Jean A. Mescher, Project Coordinator
Director Environmental Services
McKesson Corporation
One Post Street, 34th Floor
San Francisco, CA 94104

RE: Dioxin Reassessment
Arkwood, Inc. Superfund Site

Dear Ms. Mescher:

This letter provides the U.S. Environmental Protection Agency's (EPA) direction for the path forward on dioxin reassessment activities at the Arkwood, Inc. Superfund Site.

The EPA has reviewed the submitted *Site Inspection and Screening Risk Assessment for Dioxins and Furans*, dated December 18, 2012, and risk assessment support comments from both the EPA and the Arkansas Department of Environmental Quality are enclosed for your reference.

The EPA's direction for the dioxin reassessment path forward is for McKesson to submit an updated Site Conceptual Model (CSM). An updated CSM would set the foundation for the potential sources, exposure pathways, and receptors, prior to any further sampling activities. The deadline for this CSM submittal by McKesson is on or by Monday, July 15, 2013.

I look forward to continued efforts to bring dioxin reassessment activities at this site to conclusion. This topic is of importance to the EPA and if there are any questions, please feel free to contact me by telephone at 214.665.8409, or via email at tzhone.stephen@epa.gov.

Sincerely,

Stephen Tzhone
Remedial Project Manager

Enclosures (2)

cc: Marlene Berg, EPA OSRTI
Gloria Moran, EPA R6
Mark Moix, ADEQ

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

APR 0 8 2013

MEMORANDUM

Subject: Arkwood, Inc. Superfund Site - Comments on the Site Inspection and Screening Risk Assessment for Dioxins/Furans

From: Jon Rauscher, Ph.D. JOR
Toxicologist

To: Stephen Tzhone
Remedial Project Manager

This memorandum provides general and specific comments on the document entitled "Site Inspection and Screening Risk Assessment for Dioxins/Furans, Arkwood, Inc. Site, Omaha, Arkansas."

General comments on the document:

1. The Screening Risk Assessment should have a Conceptual Site Model (CSM). A CSM would allow the reader to better understand the potential sources, exposure pathways and receptors.

2. The discussion of the groundwater treatment and New Cricket Spring are not directly tied to the objective of applying the new dioxin soil screening level and should be removed from the document.

Specific comments on document are as follows:

1. Page 2, Site History/Regulatory Background: The EPA disagrees with the statement that "the cancer potency factor is extended to other 2,3,7,8-chlorinated dioxin species with inadequate evidence of carcinogenicity in animals or human, but acting through the same Ah receptor as TCDD, using TCDD toxicity equivalency (TEQ) approach" and demands that the word "inadequate" should be deleted from the sentence. The TEQ approach is well-studied toxicologically and dose-addition between the 2,3,7,8-chlorinated dioxin species is well established. The adequacy of the TEF approach is demonstrated by fulfilling the following assumptions:

    a. The Ah receptor mediates most if not all of the biological and toxic effects of TCDD and the other dioxin-like compounds (DLCs);
    b. The applicability of extrapolations from short-term bioassays to long-term health effects;

c. The similarities between interspecies kinetics and potency;
d. Appropriateness of high-dose to low-dose extrapolations; and
e. The constancy of TEF relationships for difference exposure routes, health endpoints, and dose levels.

The TEQ approach is applicable to noncancer health effects of 2,3,7,8-tetrachlorodibenzo-p-dioxins (TCDD) and the other DLCs. Therefore, the TEQ approach can be applied to the Reference Dose (RfD) and used to estimate the potential for noncancer health effect of TCDD and the other DLCs.

2. Page 3, Site History/Regulatory Background: EPA disagrees with the statement that the "new RfD is based on somewhat controversial epidemiologic data concerning the effects on sperm motility and thyroid hormone levels following TCDD exposure" and demands that the words "somewhat controversial" should be deleted from the sentence. The RfD is based upon identical Low Observed Adverse Effects Levels (LOAELs) for male reproductive effects (decreased sperm count and motility) and upon increased neonatal thyroid stimulating hormone levels. EPA determined that these sensitive health effects are the best foundation for determining the potential noncancer health effects and served as co-principal studies in the determination of the RfD.

3. Page 3, Conclusion Summary: The issue of groundwater and New Cricket Spring is not relevant to the issue of the soil dioxin level and should be removed from this document.

4. Page 4, Site Inspection on 11/19/12: This issue of groundwater and New Cricket Spring is not relevant to the issue of the soil dioxin level and should be removed from the document.

5. Page 5, Ditch Sediment Sampling for PCDD/Fs at the Arkwood, Inc. Site on Sept. 24 and Oct. 26, 2012: Six soil / sediment samples were collected without any apparent Data Quality Objectives (DQOs) and did not follow the recommended approach by EPA to evaluate RfD based preliminary remediation goal (PRG) for TCDD and DLCs at Superfund and Resource Conservation and Recovery Act (RCRA) cleanups (http://www.epa.gov/superfund/health/contaminants/dioxin/dioxinsoil.html). Five grab samples are insufficient to statistically evaluate the level of DLCs and would result in the maximum concentration (1,598 ppt TEQ, Sample 2) being used to represent an exposure point concentration (EPC) at the site. The dioxin concentration in Sample 2 exceeded the PRG for commercial/industrial soil (664 ppt TEQ). In addition, the selection of a "background" location adjacent to railroad tracks is ridiculous, though the sample from this location had the lowest TEQ concentration (43 ppt) of the six samples.
The sampling should have used the incremental composite sampling (ICS) approach to evaluate the extent of potentially contaminated soil and sediment from the Arkwood site.

Use of the Uniform Federal Policy Quality Assurance Plan for Dioxin Sites and ICS sampling will result in a DQO based approach to evaluate the nature and extent of the dioxin contamination at the Arkwood site.

6. Page 6, Ditch Sediment Sampling for PCDD/Fs at the Arkwood, Inc. Site on Sept. 24 and Oct. 26, 2012: EPA disagrees with the interpretation that hepta- and octa- chlorodibenzo-p-dioxins and dibenzofurans (CDD/F) do not have the potential to cause noncancer health effects (male reproductive effects (decreased sperm count and motility) and increased neonatal thyroid stimulating hormone levels). The EPA as part of the Integrated Risk Information System (IRIS) process has clearly established the potential for noncancer health effects from TCDD and other DLCs (http://www.epa.gov/iris/supdocs/1024index.html).

7. Page 7, Screening Risk Assessment for PCDD/Fs Based on Ditch Samples at the Arkwood, Inc. Site: An exposure frequency of 100 days per year for an on-site industrial worker is not a conservative estimate if reuse of the Arkwood site were to take place. In the draft Recommended Interim Preliminary Remediation Goals for Dioxin in Soil at CERCLA and RCRA Sites (USEPA 2009), EPA used an exposure frequency of 250 and 225 days per year for an indoor worker and outdoor worker, respectively. The screening risk assessment should have used the exposure frequencies in USEPA 2009.

   A 'ditch sediment contact frequency factor' of 0.1 is only justifiable due to the paltry number of samples taken in the ditches. A sampling approach such as the one recommended by EPA for CERCLA and RCRA sites would result in a robust analysis of potential dioxin risk and a contact soil / sediment contact frequency factor of 1 would be warranted.

   An oral bioavailability factor of less than 100% can be expected and on a site-specific basis bioavailability could be estimated using the EPA report on bioavailability and dioxin-like compounds in soil (http://www.epa.gov/superfund/health/contaminants/dioxin/pdfs/Final_dioxin_RBA_Report_12_20_10.pdf).

8. Page 8, Screening Risk Assessment for PCDD/Fs Based on Ditch Samples at the Arkwood, Inc. Site: The report presents on basis for Sample 2 (1,598 ppt TEQ) being a "non-representative outlier" other than sample had the highest value. A total of five samples are insufficient to determine if the results from Sample 2 can be considered an outlier. Since five samples are insufficient to statistically evaluate the level of DLCs, Sample 2 should be used to represent an EPC for the site.

Table 3 (Screening Risk Assessment Calculations for NonCancer Effects: Hazard Index (HI)) provides a nonsensical evaluation of potential non-cancer risk. An equally plausible hazard index (HI) for a future commercial/industrial worker would be 2.4 (1,598 ppt TEQ / 664 ppt TEQ = 2.4) and this HI would indicate that the potential for non-cancer health effects to a future commercial/industrial worker. For potential future resident, a plausible HI would be 32 (1,598 ppt TEQ / 50 ppt TEQ = 32) and this HI would indicate that the potential for non-cancer health effects to a future resident. In addition, the document does not provide sufficient information concerning the exposure and toxicological parameters used to be able to reproduce the risk calculations.

Table 4 (Screening Risk Assessment Calculations for Cancer Effects: Incremental Lifetime Cancer Risk) provides an evaluation of potential lifetime excess cancer risk that cannot be reproduced. The document does not provide sufficient information concerning the exposure and toxicological parameters used to be able to reproduce the risk calculations.

9. Page 9 Discussion: EPA disagrees with the conclusion that "more comprehensive soil sampling does not appear to be warranted given the results of this screening risk assessment for the ditch sediment and berm PCDD/Fs." An inadequate number of samples were collected to reach the conclusion that more sampling is not warranted and samples were collected with no apparent DQOs. Additional sampling is warranted and the sampling approach should follow DQO driven approach recommended by EPA to evaluate RfD based PRG for TCDD and DLCs at Superfund and Resource Conservation and Recovery Act (RCRA) cleanups (http://www.epa.gov/superfund/health/contaminants/dioxin/dioxinsoil.html).

   This issue of groundwater and New Cricket Spring is not relevant to the issue of the soil dioxin level and should be removed from the document.

10. Page 10, Conclusions: EPA disagrees with the conclusion sufficient information has been properly collected and evaluated to conclude that the site does not present an unacceptable PCDD/F risk. Additional soil and sediment samples should be collected using a DQO driven approach and the evaluation of PCDD/F risk needs to be conducted in a transparent using exposure and toxicological parameter agreed upon by EPA.

ADEQ

ARKANSAS
Department of Environmental Quality

CERTIFIED MAIL No. 91 7199 9991 7030 4901 6642
Return Receipt Requested

April 10, 2013

U.S. EPA Region 6
Attn: Mr. Stephen Tzhone
Mail Code: 6SF
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

RE: Site Inspection and Screening Risk Assessment for Dioxins/Furans
Arkwood, Inc. Site, Omaha, Arkansas
EPA ID# ARD084930148; AFIN# 05-00003
Dated December 17, 2012

Dear Mr. Tzhone:

The Arkansas Department of Environmental Quality - Hazardous Waste Division (ADEQ) has received the Site Inspection and Screening Risk Assessment for Dioxins/Furans for the Arkwood, Inc. Site, Omaha, Arkansas dated December 17, 2012. After reviewing the report ADEQ has the following comments:

1) **Ditch Sediment Sampling for Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) at the Arkwood, Inc. Site on September 24 and October 26, 2012, paragraph 4, page 5:** "Two samples were collected at the main Site, one at the base of the stormwater ditch (328 parts per trillion (ppt) toxicity equivalence (TEQ), sample 1) and a second sample on the adjacent natural berm (1,598 ppt TEQ, Sample 2)....". The source of the contamination in the berm sample is uncertain, but is suspected to relate to the former ash pile originally located within 20-30 feet upstream before its excavation." The ADEQ is concerned about the high PCDD/F TEQ value of the rocky natural berm when compared to the new soil dioxin preliminary remediation goal (PRG) for industrial use of 664 ppt TEQ. Please provide any additional information to alleviate this concern.

2) **Screening Risk Assessment for PCDD/Fs Based on Ditch Samples at the Arkwood, Inc. Site, paragraph 4, page 7:** "A ditch sediment contact frequency factor of 0.1 was applied to the Exposure Frequency parameter in order to adjust for the more limited likelihood of any person having soil contact in ditches and the berm.....". The report states that the exposure frequencies were multiplied by a frequency factor of 0.1 since the ditches and berms that contain the sampled sediment involve such a small portion of the site. ADEQ does not agree with the use of this frequency factor. These risk calculations should be revised without using this frequency factor. Exposure frequencies of 100 days/year for the industrial worker and 52 days/year for the trespasser should be used.

3) **Screening Risk Assessment for Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/Fs) Based on Ditch Samples at the Arkwood, Inc. Site, paragraph 6, page 8:** "Also, the ditch sediments represent environmental sink samples that are likely to considerably overstate the probable PCDD/F exposures to surface soils in general for both on-Site soils (which are fully vegetated and capped with 6 inches of clean soil)...." Please clarify the extent of the vegetated soil cap, and whether or not the cap coverage includes the railroad ditch area.

4) **General:** The report lacks clarity as to the purpose and scope of the study. Specifically, why was the study limited to sediment? The report should clarify the objective(s) and provide rationale for the scope. The rationale for considering the limited number of samples as representative of on- and off-site conditions should be included. An evaluation of potential future risk would be needed to evaluate re-use of the site.

If you have any concerns or questions, please contact me at 501-682-0852 or via e-mail moix@adeq.state.ar.us.

Sincerely,

Mark Moix

Mark Moix
Engineer, PE
Technical Branch
Hazardous Waste Division

cc: Ruben Moya, EPA Region 6
Carlos Sanchez, EPA Region 6